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(54) A portable trolley

(57) The trolley comprises a base which has a first support member 2 pivotally connected with a second support member 3, the first and second support members having wheel means 4,5,6 for facilitating movement of the trolley. The trolley is switchable about a pivot axis, e.g. the axis (5a, Fig. 2) of the wheels 5, from an operative position, in which the first and second support members 2,3 co-operate to present an upper support surface and in which the wheel means 4,5,6 extends beneath a lower surface, and a second, folded position, in which the first part is folded substantially through 180° to lie at least partly within said second part. The trolley may be used for the movement of suitcases, packages, objects such as refrigerators, pianos and organs, or as a creeper for a person working under a motor vehicle. Straps may be used to retain the load on the trolley.

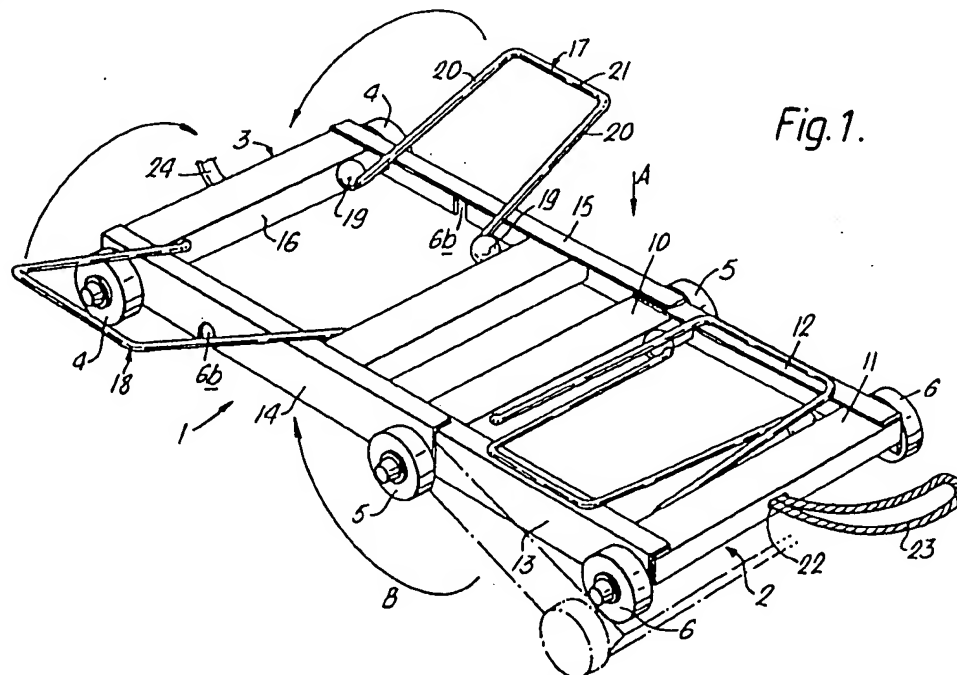
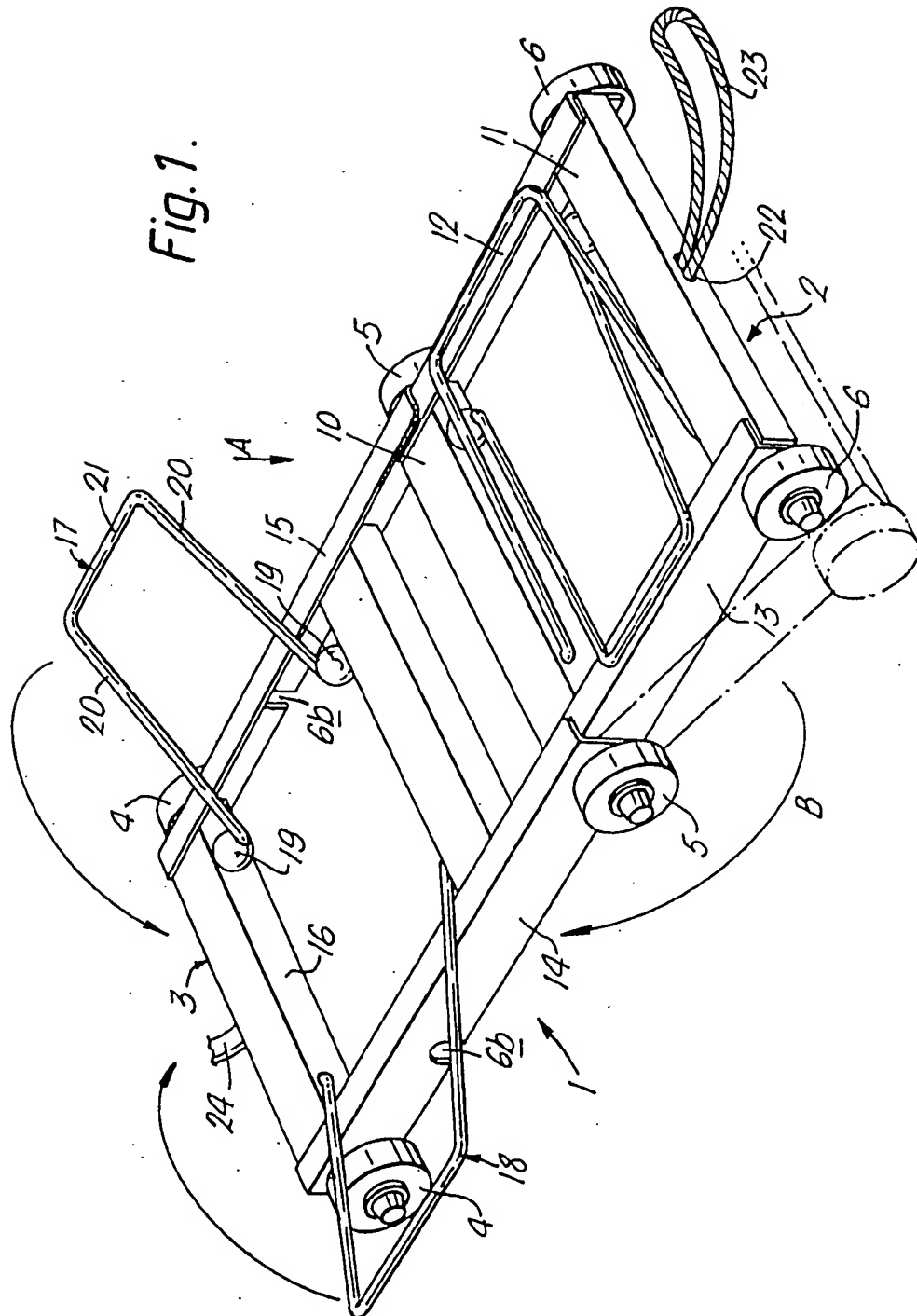
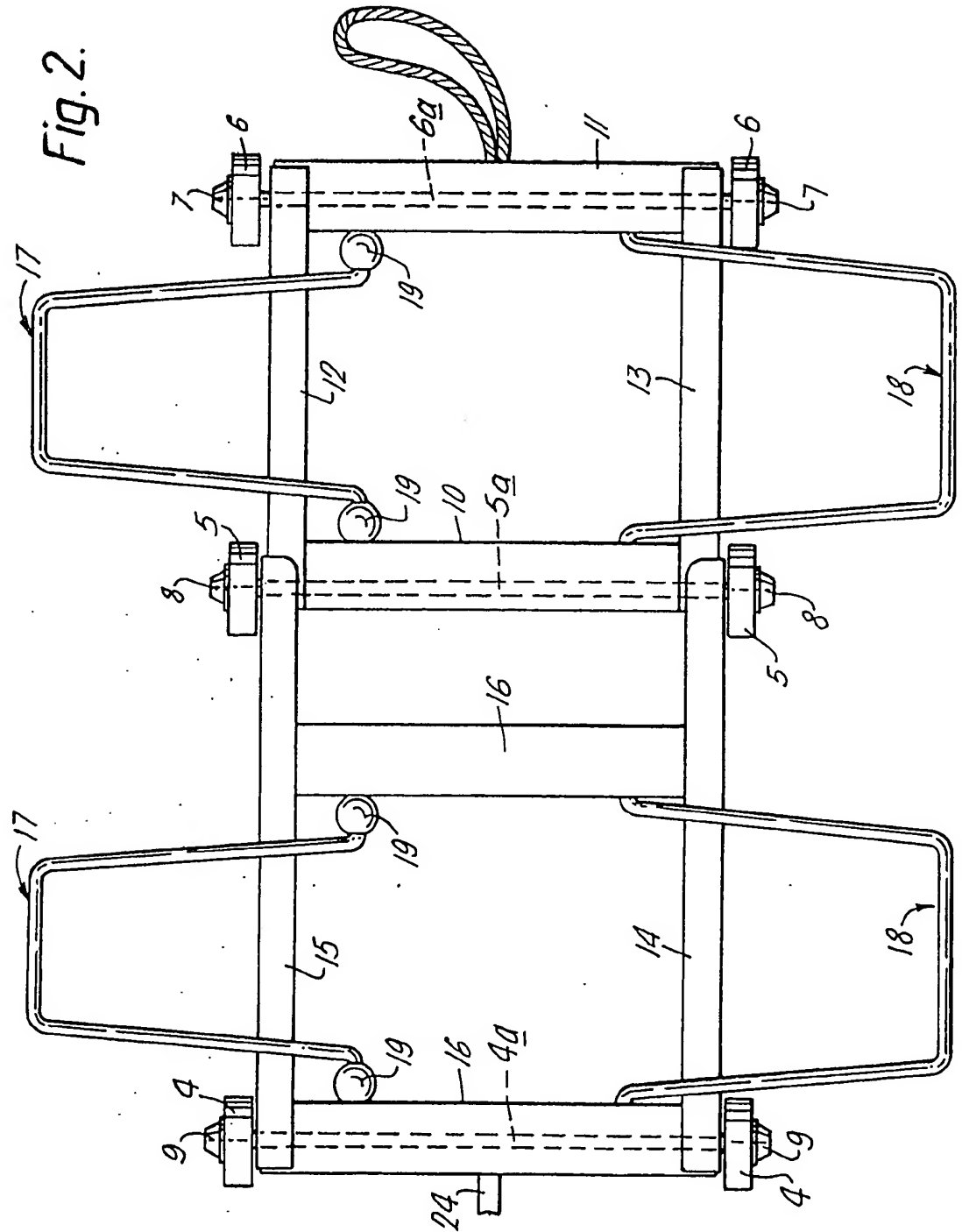


Fig. 1.





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Fig. 3.

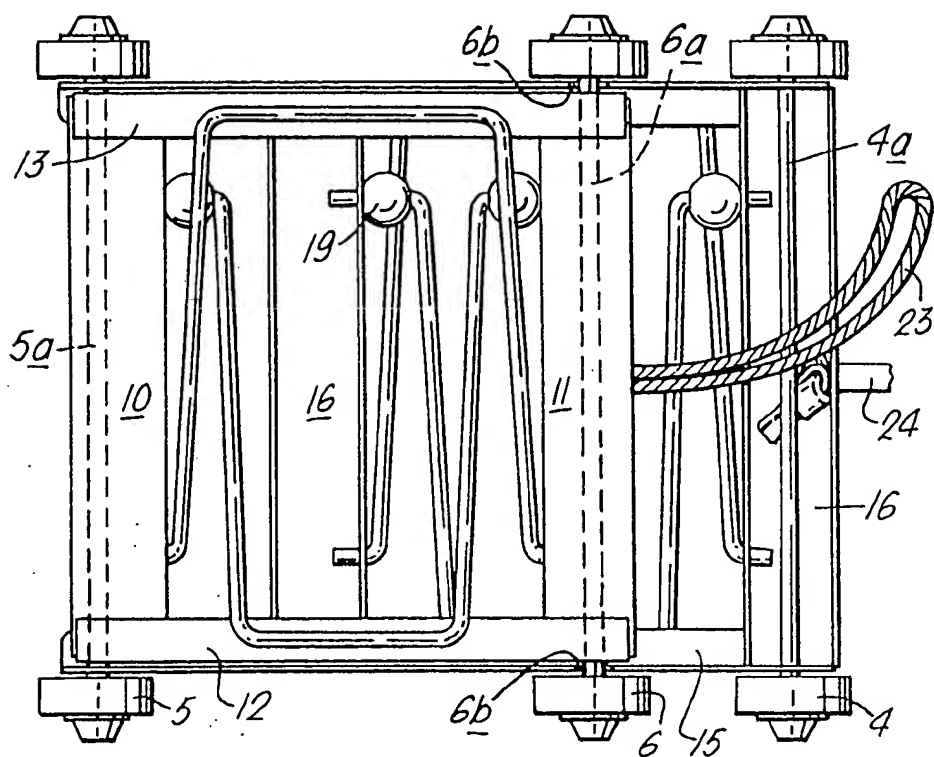
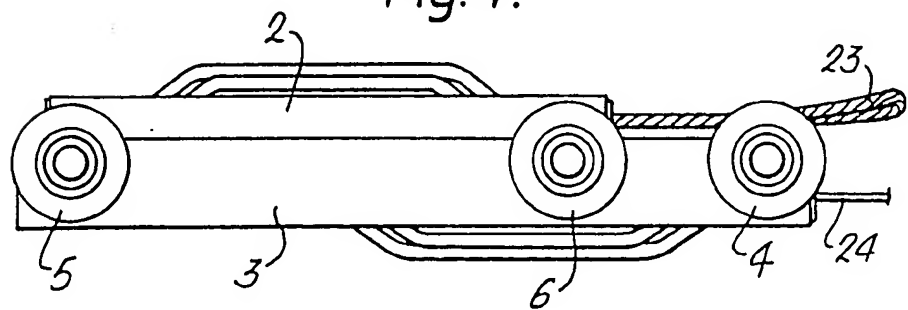


Fig. 4.



SPECIFICATION

A portable trolley

5 THIS INVENTION relates to portable trolleys. In particular the invention relates to portable trolleys for use in facilitating the movement of suitcases, packages and the like.

A wide variety of trolley arrangements have
10 been proposed for carrying suitcases, or other packages in order to facilitate movement thereof. One of the most commonly known trolley arrangements comprises a lower mounting portion connected with a substantially perpendicular handle member. A wheel is
15 mounted on either side of the trolley in the region of the junction between the mounting portion and the handle member. A suitcase or package to be carried is positioned on the mounting portion with the handle member in a substantially upright position. In this position the suitcase is supported on the mounting
20 portion by the wheels, at the rear thereof, and by a downwardly projecting support member at the front of the mounting portion. To move the trolley, the arrangement is pivoted so that handle member moves forwardly and the support member is raised upwardly out of contact with the ground. Thus, the wheels are now
25 free to rotate and the trolley, with suitcase attached can be moved. However, such trolley arrangements suffer from a substantial disadvantage in that, whilst a proportion of the weight of the suitcase is supported directly by
30 the wheels, a substantial proportion of the weight must also be supported by the handle member and thus by the person using the trolley. This means that the use of such a trolley for the movement of heavy suitcases and packages inevitably results in undesired
35 stress being placed on the arm of a user.

It has also been proposed to provide a plurality of wheels as an integral part of one surface of a suitcase, usually the "back" surface
40 opposite to the handle and catches. This arrangement allows the whole of the weight of the suitcase to be supported on the wheels but has a number of disadvantages. For example, the adaptation of a suitcase to incorporate such wheels is expensive and, provides
45 an arrangement that is usable only with the suitcase to which the wheels are fitted and cannot be used easily as a trolley means for transport of other luggage or packages.

50 It is also known to provide folding trolley arrangements. However, in the past, such folding trolleys have been complicated to manufacture and prone to weakness, typically in the region or regions at which the various
55 parts of the trolley are folded.

It is an object of the present invention to provide a portable trolley that at least mitigates the problems associated with prior art trolley arrangements.

60 Accordingly, the invention provides a portable trolley comprising a base, which base has a first support member pivotally connected with a second support member, the first and second support members having wheel means for facilitating movement of the trolley, the trolley being switchable about a pivot axis from an operative position, in which the first and second support members co-operate to present an upper support surface and in which the wheel means extends beneath a lower surface, and a second, folded position, in which the first part is folded substantially through 180° to lie at least partly within said second part.

Desirably, the said pivot axis is defined by an axle member of a first pair of wheel means.

Conveniently, the trolley also comprises separate second and third pairs of wheel means, said second pair being provided on said first support member and said third pair being provided on said second support member.

Conveniently, outer walls of said second support member are adapted to receive axle members of said second wheel means to facilitate folding together of said first and second support members to achieve said folded position.

Desirably, said first and second support members are defined as open framework members.

Alternatively, said first or said second member may be at least partially covered.

Advantageously, extension elements that are adapted to move from a first, folded position to a second, extended position are provided on one of said first or said second member.

Typically, handle means are provided to facilitate movement of the trolley.

Conveniently, straps or other suitable retaining means are provided for fixing a suitcase or other package to the trolley.

In order that the invention may be more readily understood, and so that further features thereof may be appreciated, an embodiment of a portable trolley in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

115 *Figure 1* is a perspective view of a trolley of the invention, with one of its two sets of extension elements in a folded position;

Figure 2 is a plan view of the trolley of Fig. 1, but with both sets of the extension elements in an extended position;

Figure 3 is an underneath plan view of the trolley of Figs. 1 and 2, but shown in a folded position; and

Figure 4 is a side elevational view of the folded trolley of Fig. 3.

Referring to the drawings, a trolley, generally indicated at 1 comprises a first support member 2 pivotally connected to a second support member 3. The support members are

live to one another, between a

first, open, position, (Figs. 1 and 2) in which upper surfaces of the support members co-operate to present a substantially planar surface for receiving a suitcase or package, and a second, folded, position (Figs. 3 and 4) in which the members are rotated through substantially 180°, about a pivot axis defined at the interconnection between the two members, to a position in which the first support member 2 is received at least partly within the second support member 3.

Three pairs of wheels 4, 5 and 6 are provided on the trolley, to rotate about respective axle means 4a, 5a and 6a, as indicated in broken lines in Fig. 2, and to project downwardly below a lower surface of the members 2 and 3 of the trolley when in the first, open, position. When the trolley is in the second, folded, position, the wheels project outwardly to either side of the folded trolley but do not break the plane of the respective upper surfaces of the support members 2, 3. (It will be appreciated that, in the folded position, one of the said upper surfaces is in fact facing in an opposite direction to the other). The wheels 4, 5 and 6 are mounted on their respective axles by conventional hub means, 7, 8 and 9 respectively.

The first support member 2 comprises a pair of parallel, inverted channel members 10, 11 connected by a pair of angle members 12, 13 to define a substantially rectangular member.

The second support member 3 comprises a pair of space-apart angle members 14, 15 connected at their ends remote from the first member 2 and near their ends adjacent to the first member, by channel members 16. The ends of the members 14, 15 adjacent the first support member 3 are pivotally mounted on the axle 5a of the wheels 5. As the axle 5a is also mounted to pass through one end of each of the angle members 12, 13 of the support member 2, the axle 5a serves to connect the support members 2 and 3 for pivotal movement about the axle 5a. As best seen with reference to Fig. 1, showing the open position of the trolley, the angle members are all inverted so that a web of each member presents an upwardly facing and inwardly projecting surface and a flange of each member presents a substantially vertical outer surface for the trolley 1.

The angle members 14, 15 of the second support member 3 overlie the channel member 10 and respective ends of the angle members 12, 13 of the first support member 2. The co-operation between these overlying elements provides a stop that prevents relative rotation of the members 2, 3 beyond a position in which the upper surfaces are aligned, but permits rotation of the members 2, 3, in the direction of arrow B, to achieve the folded position. The end surfaces of the elements 14, 15 may be appropriately shaped to facilitate

tate relative rotation of the members 2, 3. In the open position of the trolley, as illustrated in Fig. 1, the downward weight of a suitcase or package upon the upper surface of the members 2, 3, acting as indicated by the arrow A, will tend to lock the trolley members 2, 3 in the open position by urging against the stop defined by the overlying members.

Referring particularly to Figs. 1, 3 and 4, it can be seen that rotation of the support member 2, in the direction illustrated by the arrow B (Fig. 1), moves the support member 2 to a folded storage and transportation position substantially within the support member 3 (shown in Figs. 3 and 4). The width of the support member 2 is slightly less than the width of the support member 3 in order to enable the member 2 to be received within the member 3. To enable close positioning of the members 2 and 3, the axle 6a must be accommodated within the upright walls of the angle members 14, 15 of the member 3. For this purpose elongate slots 6b are appropriately positioned in the upright walls of the angle members 14, 15 to receive the axle 6a. If desired, appropriate clips may be provided in the region of the slots 6b to clip the axle 6a into the folded position and thus to anchor the first member 2 within the second member 3 to facilitate safe transportation of the folded trolley.

In order to extend the size range of suitcases or packages that may be carried by the trolley 1, one or two sets of extension elements 17, 18 may be provided. In the illustrated embodiment there are two sets of such elements, in each of which the extension element 17 has end portions forming trunnions that pass through spacer beads 19 into holes in the inverted channel members 10, 11, or 16 of the relevant support member, the extension element 17 comprising two substantially parallel legs 20 extending from the trunnions and connected by a cross-portion 21. The free ends of the legs 20 are bent substantially at right angles to form the trunnions. The extension elements 18 are similar in shape to the elements 17 but are slightly wider than the latter, the trunnion forming parts of the legs passing directly into holes in the channel members 10, 11 or 16 as the case may be. This difference in size enables the separate extension elements 17, 18 to be moved into the folded position, as shown in Fig. 3, without interfering with each other.

Any suitable carrying means may be provided: for example, a rope or flexible strap handle may be connected through a hole or holes 22. Conveniently a short rope loop 23 is provided at one end to serve as a carrying handle or for hanging the trolley on a hook for stowage, and an extended flexible strap 24 (only partly shown) is provided at the other end for drawing the trolley along the ground when in use. Strap means, such as elastic

straps, may be used for quick attachment of a suitcase or other package to the trolley. Such strap means may also be useful for securing the trolley in the folded state shown in Figs. 3 and 4.

It will be appreciated that whilst the trolley has been described as having a generally open framework, the second support member 3 could be at least partly constituted by a suitably flanged plate. The trolley may also be constructed from suitably sectioned tubing or from any other convenient materials. The wheel means described comprise wheels supported for rotation about axles that extend through the width of the trolley. However, it may be convenient for some, or all of these wheels to be replaced by castors, or for the wheels of a pair to be mounted upon short individual stub axles, rather than a single long axle. Any other convenient wheel or roller means may also be used.

A trolley of the invention has been found to provide significant advantages in that a robust trolley with its wheelbase very close to the ground is provided which is lightweight but rigid and strong and can be easily folded for storage or convenient transport.

Whilst a trolley of the invention has been found to be particularly useful for the movement of suitcases and other packages, it will be appreciated that the trolley could be used for any number of purposes. For example, trolleys of the invention have been found to be useful to facilitate the movement of heavy or awkwardly shaped objects such as refrigerators, pianos, organs, etc. The trolley may be used, conveniently in conjunction with a flat plate or other tray, to enable a person lying on the trolley to slide beneath objects, for example to work beneath a motor vehicle.

CLAIMS

1. A portable trolley comprising a base, which base has a first support member pivotally connected with a second support member, the first and second support members having wheel means for facilitating movement of the trolley, the trolley being switchable about a pivot axis from an operative position, in which the first and second support members co-operate to present an upper support surface and in which the wheel means extends beneath a lower surface, and a second, folded position, in which the first part is folded substantially through 180° to lie at least partly within said second part.

2. A portable trolley according to claim 1, wherein the said pivot axis is defined by an axle member of a first pair of wheel means.

3. A portable trolley according to claim 2, further comprising separate second and third pairs of wheel means, said second pair being provided on said first support member and said third pair being provided on said second support member.

4. A portable trolley according to claim 3, wherein outer walls of said second support member are adapted to receive axle members of said second wheel means to facilitate folding together of said first and second support members to achieve said folded position.

5. A portable trolley according to any one of claims 1 to 4, wherein said first and second support members are defined as open framework members.

6. A portable trolley according to any one of claims 1 to 4, wherein said first or said second member is at least partially covered.

7. A portable trolley according to any one of claims 1 to 6, further comprising extension elements that are adapted to move from a first, folded, position to a second, extended, position, on one or both of said first and second members.

8. A portable trolley according to any one of claims 1 to 7, wherein handle means are provided to facilitate movement of the trolley.

9. A portable trolley according to any one of claims 1 to 8, wherein retaining means are provided for fixing a suitcase or other package to the trolley.

10. A portable trolley according to claim 9, wherein said retaining means comprise straps.

11. A portable trolley substantially as herein described with reference to and as shown in the accompanying drawings.

12. Any novel feature and any novel combination of features disclosed herein.

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